

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

Element Code: AMACC01160

Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Myotis occultus*

COMMON NAME: Arizona Myotis, Occult Little Brown Bat, Hollister's Bat

SYNONYMS: *Myotis lucifugus occultus*, *Myotis baileyi*

FAMILY: Vespertilionidae

AUTHOR, PLACE OF PUBLICATION: Hollister. 1909. Proc. Biol. Soc. Washington, 22:43.

TYPE LOCALITY: West side of Colorado River, 10 miles above Needles, San Bernardino Co., California.

TYPE SPECIMEN:

TAXONOMIC UNIQUENESS: One of 84 North American species in the genus (Wilson and Reeder 1993). During and since the 1960s the question of whether or not this bat is a species or subspecies has been the subject of investigation. It was originally described in 1909 as a distinct species. Various dental characteristics were later found to overlap with those of *M. lucifugus* leading some authorities (e.g. Findley and Jones, 1967 and Hall, 1981) to consider it only subspecifically distinct from *M. lucifugus*. Barbour and Davis (1969) disagreed, believing that the available evidence was insufficient to warrant such a change. Hoffmeister (1986) assessed 25 cranial measurements and concluded that it was not conspecific with *M. lucifugus* and referred it tentatively to *Myotis occultus*. Based on recent mitochondrial DNA and morphological evidence by Piaggio et al. (2002), *M. occultus* is a specifically distinct, monophyletic lineage.

DESCRIPTION: Medium sized *Myotis* (total length = 80.0-97.0 mm [3.2-3.88 in.] and forearm length = 36.0-41.0 mm [1.44-1.64 in.]) with sleek glossy fur. Small ears (11.0-16.0 mm [0.44-0.64 in.]) and large feet (8.0-11.0 mm [0.32-0.44 in.]) are characteristic. Long hairs occur on the toes and extend beyond the tips of the claws. Color often bright, generally tawny, ochraceous, pale tan, or reddish-brown to dark brown.

It is the only long-footed (i.e. hind foot length >8.0 mm [0.32 in.]) *Myotis* in Arizona with a gradually sloping forehead and the only *Myotis* in Arizona with only 1 small upper premolar behind the canine. In the rare individual with 2, it is on 1 side only or 1 is crowded out of alignment.

AIDS TO IDENTIFICATION: The genus *Myotis* is distinguished from other bat species in Arizona by lack of a nose-leaf, or enlarged facial glands, or a tail extending beyond the tail membrane, or fur on the tail membrane. *Myotis* are initially identified by their uniform shades of brown and by their straight and relatively narrow tragus with a pointed tip. When compared to other *Myotis*, the lack of a keeled calcar distinguishes *M. occultus* from *M. californicus*, *M. ciliolabrum*, and *M. volans*. Shorter ears (11-16 mm) distinguish *M. occultus* from *M. evotis* (20-24 mm), *M. auriculus* (19-21 mm) and usually from *M. thysanodes* (12-19 mm).

M. occultus may also be distinguished from *M. thysanodes* by the lack of a macroscopic fringe of hairs on trailing edge of the tail membrane in *M. occultus*. Lack of bare spot between scapulae and lack of grayish back distinguish *M. occultus* from *M. velifer*. Darker ears and longer forearm (36.0-41.0 mm [1.44-1.64 in.]), and a glossier coat distinguish *M. occultus* from *M. yumanensis* which usually has light-colored ears, a shorter forearm (31.0-36.0 mm [1.24-1.44]), and a dull coat.

ILLUSTRATIONS: B&W photo (Barbour and Davis 1969:73)
Color photo (Barbour and Davis 1969: plate VI)
Color photo (In <http://www.batcon.org/javascripts/script12.html>)
Color photo (Bowers in <http://www.bowersphoto.com/pages/18181.htm>)

TOTAL RANGE: Extreme southeastern California through central and eastern Arizona into New Mexico, southward through extreme West Texas into Chihuahua. There is an isolated record from the Distrito Federal of central Mexico. Wilson and Reeder (in prep), and Barbour and Davis (1969), state Colorado as part of their range. Winter range unknown. Only 2 winter records: a few hibernating individuals in December from a mine just northwest of Parker in California (Gary Bell pers comm. in Howell 1989) and some in late December from a mine in northern Sonora (Bob Dickerman field notes in Howell 1989).

RANGE WITHIN ARIZONA: Most records are from the Mogollon Rim from Alpine northwest to near Flagstaff, including Mingus Mountain, Verde Valley, Sierra Ancha Mountains, and the Pinal Mountains. Likely occurs along the lower Colorado River Valley since it is known from at least 4 localities in the California portion of that area from the southernmost tip of Nevada south to near Yuma and 1 unmappable locality in the "Mojave Desert" of Arizona. There is also a record of 12 specimens collected in 1894 by W. Price from the then abandoned Fort Lowell near Tucson (Howell 1989) and a 1992 record from Tucson (R. Sidner pers comm. 1992).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY:

REPRODUCTION: Reproduction poorly known. Apparently the sexes roost separately in summer as no males have been found at the 3 or 4 maternity colonies that have been reported: 1 each in California, Arizona (for which there is possibly a second), and New Mexico. The Arizona and New Mexico maternity colonies are all in buildings near permanent water. The California maternity colony occupied crevices between timbers of a highway bridge near Blythe during the early 1940s. The bridge has since been torn down. This site was occupied at least from about mid April through about mid August.

Apparently this bat has 1 young per year in late June. Maternity colonies in the Southwest range from about 60 to 800 females.

FOOD HABITS: Generally hunts low over water for flying insects, probably including mosquitoes and midges. In the Southwest *M. occultus* has been observed foraging under large cottonwoods and in an orchard at low elevations. At higher elevations they usually forage at low levels over and around water. A single Arizona myotis can consume 600 mosquitoes in an hour (Davis, 2003).

HABITAT: In summer in Arizona it is usually found in ponderosa pine and oak-pine woodland near water. However, it is also found along permanent water or in riparian forest in some desert areas such as along the lower Colorado and Verde rivers. In New Mexico it is considered to be resident around large permanent bodies of water and transient elsewhere. Vegetation zone is not thought to be an important influence there.

Colonies have been found in buildings and in crevices between timbers of a highway bridge. Few winter roosts are known: 1 each in California and Sonora (see RANGE WITHIN ARIZONA, above). No hibernacula are known for Arizona or New Mexico; however, Findley, et al. (1975) suggests that in New Mexico they hibernate within the area of their summer range. Mines seem to be rarely used in summer although both winter records are from mines. It has been found roosting with *M. yumanensis*, *M. velifer*, and *Tadarida brasiliensis*.

ELEVATION: This bat is most common at higher elevations mostly between about 6,000 and 9,200 feet (1,830 - 2,806 m). There are also some records from much lower elevations: between 150 and 1,000 feet (46 - 305 m) along the lower Colorado, about 2,400 feet (732 m) at Tucson, and around 3,500 feet (1,068 m) in the vicinity of the middle Verde River.

PLANT COMMUNITY: They are primarily found over or near water. In Arizona this is usually in association with ponderosa pine forest or oak-pine woodland.

POPULATION TRENDS: Not well understood. One colony (near Blythe, California) and possibly a second (near Castle Hot Springs, Arizona) of the 3 or 4 known maternity roosts have been eliminated. A third colony (near Bosque Del Apache, New Mexico) is reported to be at least partially excluded from previously used buildings and the status of the fourth (on the Verde River) is unknown. It was in an old building that is now (as of 1990) also occupied

by people. It is not known if the bats still use the building and if they do there is no guarantee they will be protected. According to the California Department of Fish and Game, populations have drastically declined in many parts of its range.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2 USDI, FWS 1994]
[C2 USDI, FWS 1991]
[C2 USDI, FWS 1989]
[C2 USDI, FWS 1985]

STATE STATUS: None

OTHER STATUS: None (USDA, FS Region 3, 1999)
[Forest Service Sensitive USDA, FS Region 3, 1988]
[Bureau of Land Management Sensitive (USDI, BLM AZ 2000, 2005)]

MANAGEMENT FACTORS: Seem to prefer human structures for maternity roosts (although a recent radio tracking study in Arizona identified three maternity colonies, one in a building and two in large ponderosa pine snags.). May use mines or possibly caves for hibernation. Available water seems to be a consistent feature near all occurrences. Forest harvesting practices could impact this species. Also pesticides, and disturbance of maternity colonies and hibernating colonies are also threats to this species.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: A status survey, along with searches for maternity and hibernation roosts need to be conducted. General biological information (reproduction, diet, roosting, hibernation etc.) is also needed.

LAND MANAGEMENT/OWNERSHIP: BIA - Yavapai-Apache Reservation; NPS - Montezuma Castle National Monument; USFS - Apache-Sitgreaves, Coconino, Kaibab, Prescott and Tonto National Forests; AGFD Viet Ranch; Private.

SOURCES OF FURTHER INFORMATION

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